

Claims

1 A steering control device for a vehicle comprising:

a housing;

a first input shaft;

a second input shaft;

an output shaft supported by the housing in a state to allow the output shaft to rotate around an axis thereof and limit a linear motion in the axial direction and having a center line aligned on substantially the same straight line on which a center line of second input shaft is aligned, said output shaft being formed with a screw at an outer peripheral surface thereof;

a nut mounted to the output shaft;

a first transmission unit for rotating the nut in accordance with the rotational motion of the first input shaft so as to transmit the rotational motion of the first input shaft to the rotational motion of the output shaft; and

a second transmission unit for linearly moving the nut in the axial direction of the output shaft in accordance with the rotational motion of the second input shaft so as to transmit the rotational motion of the second input shaft to the rotational motion of the output shaft.

2. A steering control device for a vehicle according to claim 1, wherein said first transmission unit permits the nut to rotate

in accordance with the rotational motion of the first input shaft and to linearly move in the axial direction with respect to the first input shaft, and said second transmission unit permits the nut to linearly move in the axial direction with respect to the output shaft and to rotate.

3. A steering control device for a vehicle according to claim 1 or 2, wherein said second input shaft has a hollow structure, said second input shaft has an inner peripheral surface to which a thread is formed, said second transmission unit is provided with a hollow thrust transmission member to be fitted to the second input shaft and formed, at an outer peripheral portion thereof, with a thread and a spline mechanism for the thrust transmission member secured to the housing and adapted to guide the thrust transmission member so as to linearly move in the axial direction thereof, and said nut disposed inside the hollow thrust transmission member is linearly movable in the axial direction thereof together with the thrust transmission member and is rotatable around the axis with respect to the thrust transmission member.

4. A steering control device for a vehicle according to any one of claims 1 to 3, wherein said first transmission unit is provided with a spline shaft for the first input shaft to be connected either one of the first input shaft and the nut and a spline outer cylinder to be connected another one of the first

input shaft and the nut so as to be fitted to the spline shaft for the first input shaft.

5. A steering control device for a vehicle according to claim 3 or 4, wherein a number of balls are interposed between the nut and the output shaft, and the thrust transmission member slides with respect to the second input shaft without interposing a number of rolling balls between the thrust transmission member and the second input shaft.

6. A steering control device for a vehicle comprising:

- a housing;

- a first input shaft;

- a hollow second input shaft;

- an output shaft supported by the housing in a state to allow the output shaft to rotate around an axis thereof and limit a linear motion in the axial direction and having a center line aligned on substantially the same straight line on which a center line of the second input shaft is aligned, said output shaft being formed with a screw at an outer peripheral surface thereof;

- a nut mounted to the output shaft;

- a spline mechanism for the first input shaft for rotating the nut in accordance with the rotational motion of the first input shaft and linearly moving the nut in the axial direction with respect to the first input shaft;

- a hollow thrust transmission member fitted into the second

input shaft and formed, at an outer peripheral surface thereof, with a thread; and

another spline mechanism for the thrust transmission member fixed to the housing and adapted to guide the linear motion of the thrust transmission member in the axial direction thereof,

wherein the nut disposed inside the thrust transmission member is moved linearly in the axial direction of the thrust transmission member together therewith and rotated around the axis of the thrust transmission member.